



SCATTERING EXTRACTION WITH THE WIRE SEPTUM

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Resonant extraction requires close control of the betatron tune ν_x , the guide field, and the sextupole field for the duration of the spill; a standard fast extraction requires a kicker with a rise time less than the beam revolution period. However, any method which will perturb the circulating beam so that it moves from a stable inside region to an unstable outside region may be used to extract the beam. If, as is true with a wire septum, the division between inner and outer regions is very narrow, the perturbation can be quite small.¹ It has been suggested that multiple scattering by the septum itself is an adequate extraction mechanism for early operation of the accelerator.² The effectiveness of this technique depends on the scattering efficiency of the septum and the angular distribution of the outscattered particles. If those particles scattered toward the inner stable region are within the machine acceptance they may be successfully extracted on a succeeding turn. In this note results for the angular distribution and scattering efficiency are presented and used to estimate the extraction efficiency.

The septum used in the calculations consists of 2 mil tungsten wires spaced 50 mils on centers. The beam is supposed to be swept



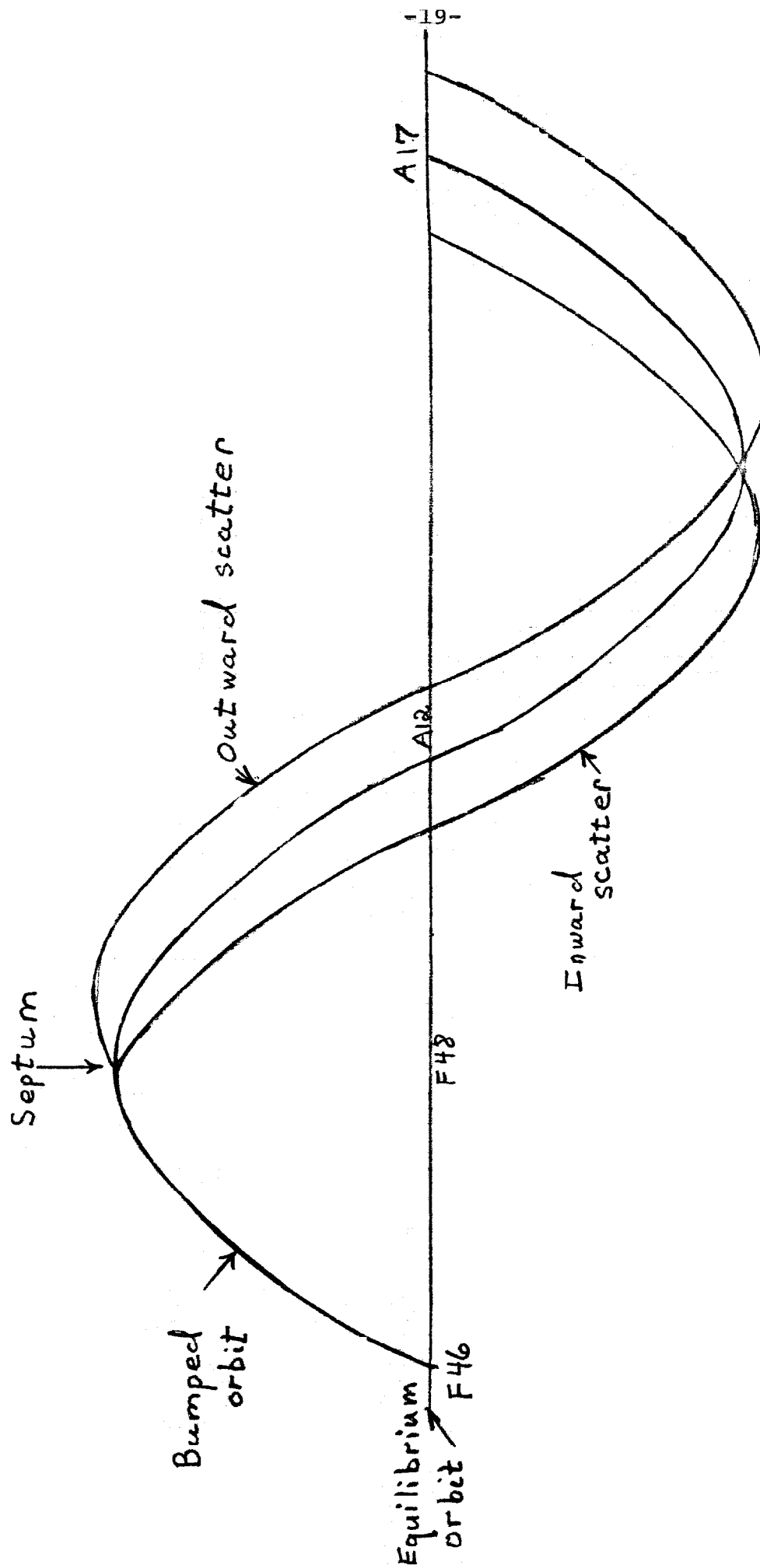


Figure 12: Scattered particle orbits